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MS APPEAL BRIEF - PATENTS
Docket No.: 4845-0101PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Thomas L. HASCHEN et al.

Application No.: 10/530,290 | Confirmation No.: 3643

Filed: June 14, 2005 | Art Unit: 1761

For: FERMENTATION BYPRODUCT FEED FORMULATION AND PROCESSING | Examiner: K. J. Mahafkey

APPEAL BRIEF TRANSMITTAL FORM

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Appeal Brief on behalf of the Appellants in connection with the above-identified application.

☐ The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on August 6, 2007.

☒ Applicant claims small entity status in accordance with 37 C.F.R. § 1.27.

The fee has been calculated as shown below:

☐ Extension of time fee pursuant to 37 C.F.R. §§ 1.17 and 1.136(a) - $

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Dated: October 9, 2007

Respectfully submitted,

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Attachment: Brief on Appeal Under 37 C.F.R. § 41.37

PATENT
4845-0101PUS1

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Thomas L. Haschen et al.

Application No.: 10/530,390 | Confirmation No.: 3643

Filed: June 14, 2005 | Art Unit: 1761

For: FERMENTATION BYPRODUCT FEED FORMULATION AND PROCESSING | Examiner: K. J. Mahafkey

BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205:

I. Real Party In Interest
II. Related Appeals and Interferences
III. Status of Claims
IV. Status of Amendments
V. Summary of Claimed Subject Matter
VI. Grounds of Rejection to be Reviewed on Appeal
VII. Argument
VIII. Claims Appendix
IX. Evidence Appendix
X. Related Proceedings Appendix

I. Real Party in Interest

The real parties in interest for this Application are the named inventors, i.e., Thomas L. Haschen and Robert L. Patterson. This Application has not been assigned.

II. Related Appeals and Interferences

To the best of Appellants' knowledge, there are no other prior or pending appeals of this Application, or patent interference proceedings, or judicial proceedings which may be related to, directly affect, or be directly affected by, or have a bearing on the Board's decision of this Appeal.

III. Status of Claims

In the Application on appeal, claims 84-97 and 99-122 are the only pending claims, are under final rejection, and are on appeal. Claims 1, 7 and 10 are independent.

IV. Status of Amendments

The Second Substitute Amendment under 37 C.F.R. § 1.116, filed on September 5, 2007, has been entered, and sets forth the claims on appeal. See, in this regard, the Advisory Action dated August 31, 2007.

V. Summary of the Claimed Subject Matter

Claims 84, 103, 105, 109, 112, 114-115, and 119-121 are independent and are summarized below. Claims 106, 107, 113, 117 and 118 are dependent and are summarized, below.

The following references to the specification are with respect to paragraph numbers as they appear in Appellants' U.S. Patent Application Publication 2005/0255220.

Claim 84 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein (disclosed, for example, in Tables 3-17), (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine (disclosed, for example, in Tables 3-17), or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94% (disclosed, for example, in Tables 3-17), comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet

distillers, brewers or fermenters by-products based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 101 is directed to the method of claim 84, wherein temperature of the by-product-nutrient-source mixture is adjusted in a range from about 180^{o}F to about 250^{o}F (see, for example, Tables 3-17).

Claim 103 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry

matter basis (disclosed, for example, in Tables 3-17), and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94% (see, for example, Tables 3-17), comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet brewers, distillers or fermenters byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 105 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), and a UIP/RUP content of over 50% and up to about 83% of the crude protein, amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers of fermenters byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient

source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 106 is directed to the method of claim 105, wherein the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is adjusted and is in a range from approximately one and one-fourth times to approximately two and one-half times the bypass protein (RUP/UIP) level in the starting by-product-nutrient-source mixture (See, for examples, Tables 3-17).

Claim 109 is directed to a system (disclosed, for example, in Fig. 1, and described in paragraph [0030]) for predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), and at least one of (1) a UIP/RUP content of over 50%

and up to about 83% of the crude protein of, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

system mixing means for creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, fermenters or brewers byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and

system adjusting means for adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs [0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature °F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 112 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient

source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 114 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 113 is directed to the end product made by the process of claim 112 (disclosed, for example, in Tables 3-17).

Claim 115 is directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed

supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 116 is directed to the method of claim 115, wherein the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is approximately 2.44 times the bypass protein (RUP/UIP) level in the starting by-product solubles-nutrient-source mixture (see, for example, Tables 3-17, notably tables 13 and 17).

Claim 117 is directed to the end product made by the process of claim 114 (disclosed, for example, in Tables 3-17).

Claim 118 is directed to the end product made by the process of claim 115 (disclosed, for example, in Tables 3-17).

Claim 119 is directed to a system (disclosed, for example, in Fig. 1, and described in paragraph [0030]) predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), of the feed or feed supplement end product composition, and at least

one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein (disclosed, for example, in Tables 3-17), (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine (disclosed, for example, in Tables 3-17), or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94% (disclosed, for example, in Tables 3-17), comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters by-products based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature °F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 120 is directed to a system (disclosed, for example, in Fig. 1, and described in paragraph [0030]) predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), of the feed or feed supplement end product composition, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein (disclosed, for example, in Tables 3-17), (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine (disclosed, for example, in Tables 3-17), or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94% (disclosed, for example, in Tables 3-17), comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters by-products based on the crude protein, UIP protein, amino acid

content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Claim 121 is directed to a system (disclosed, for example, in Fig. 1, and described in paragraph [0030]) predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts (disclosed, for example, in paragraphs [0023] – [0025]) , and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis (disclosed, for example, in Tables 3-17), of the feed or feed supplement end product composition, and a UIP/RUP content of over 50% and up to about 83% of the crude protein, amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and

up to about 8% lysine, and having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product (disclosed, for example, in Fig. 2, step S1010, and in paragraphs [0031] – [0049]);

system determining means (disclosed, for example, in Figs. 1 and 2) for creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources (disclosed, for example, in Fig. 2, Steps S1030 through Steps S1070, and in paragraphs [0056] – [0059]); and system adjusting means for adjusting temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product (disclosed, for example, in Fig. 3, step S1090, and in paragraphs[0059] – [0074]),

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644 (disclosed, for example, in paragraph [0074]).

Appellant respectfully submits that claims 84, 85, 103, 104, 105, 106, 107, 108, 109, 112, 113, 114, 115, 116, 117, 118 119, 120 and 121 do not stand or fall together, but are separately patentable.

In this regard, claims 84, 103 and 105 are respectively directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts having at least one of, or at least two of, or all three of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%. Additionally, in this regard, claim 106 depends from claim 105 and further recites that the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is adjusted and is in a range from approximately one and one-fourth times to approximately two and one-half times the bypass protein (RUP/UIP) level in the starting by-product-nutrient-source mixture. Further in this regard, claim 109 is directed to a different statutory class than any of claims 84, 103 and 105. Also, further in this regard, claims 112, 114 and 114 are respectively directed to a method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles having at least one of, or at least two of, or all three of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%. Further in this regard, claim 109 is directed to a different statutory class than any of claims 84, 103 and

105. Additionally, in this regard, claims 85, 104, 107, 108, 113, 117 and 118 respectively recite products made by the methods of claims 84, 103, 105, 106, 112, 114 and 115. Also, in this regard, the temperature range recited in claim 101 patentably defines over the claim from which it depends by reciting experimentally obtained values. Also, in this regard, claims 106 and 116 recites significant values or ranges of values of specific nutrients.

VI. Grounds of Rejection to be Reviewed on Appeal

A. Claims 87, 89, 90, 96, 106, 110, 116 and 122 stand rejected under 35 USC § 112, second paragraph as being incomplete for omitting essential elements, such omission amounting to a gap between the elements, citing MPEP § 2172.01.

B. Claims 109-111 and 119-122 stand rejected under 35 USC § 112, second paragraph as being indefinite.

C. Claims 84-122 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,824,355 to Heitritter et al. ("Heitritter") in view of U.S. Patent 5, 219,596 to Schingoethe (Feed Wet Distillers Grains to Dairy Cattle, May 2001).

VII. Argument

A. Claims 84-122 are rejected under 35 USC § 112, second paragraph for reciting a relative term. This rejection is respectfully traversed.

Claims 116 and 122 recite the terminology "starting by-product solubles nutrient source mixture," which does not find proper antecedent basis in the claim(s) from which these claims depend. In particular, the Advisory Action, dated September 19, 2007, indicates that it is unclear at what point of the claimed process, the starting mixture is produced. Appellants respectfully submit that this rejection is without merit and should be traversed because these claims positively recite "creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources, and adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product." It appears clear to Appellants that the starting by-product solubles nutrient source mixture is what is created, as quoted above.

Accordingly, reconsideration and reversal of this rejection of claims 116 and 122 are respectfully requested.

Claims 87, 89, 90, 96, 106, 110, 116 and 122 stand rejected under 35 USC § 112, second paragraph as being incomplete for omitting essential elements, such omission amounting to a gap between the elements, citing MPEP § 2172.01. This rejection is respectfully traversed.

The Office Action asserts that the claims refer to increasing the nutrient values of a source mixture but do not refer to the method by which this is done and, because of this, it is unclear in which step of the independent claim an increased nutrient value is achieved. For example, the Office Action indicates that it is unclear in claim 87 if the nutrient value increase is increased in step a of claim 84, step b of claim 84, or in some other undisclosed step.

Appellants respectfully submit that the rationale stated to support this rejection does not support the rejection. In other words, the Office Action does not explain what a failure to understand exactly where, in the overall claimed process, an increased nutrient value is achieved, has to do with the claims omitting essential elements. Nor does the Office Action explain what a failure to understand exactly where, in the overall claimed process, an increased nutrient value is achieved has to do with the claims omitting essential elements. Moreover, for reasons discussed below, Appellants respectfully submit that these issues do not impact on the issue of whether Appellants' claims comply with the requirements of 35 USC § 112, second paragraph.

What is in issue in a rejection under 35 USC § 112, second paragraph has been explained by the Court of Appeals for the Federal Circuit and only the test that the court provides for compliance with the second paragraph needs to be met by the claims. The test for compliance with the second paragraph of 35 U.S.C. § 112, as stated in Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), cert. denied, 510 U.S. 1100 (1994) is

whether one skilled in the art would understand the bounds of the claims when read in light of the specification. If the claims, read in light of the specification, reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. See, also, In re Merat, 519 F.2d 1390, 1396, 186 USPQ 471, 476 (CCPA 1975), which stated that the question under Section 112, second paragraph is whether the claim language, when read by a person of ordinary skill in the art in light of the specification, describes the subject matter with sufficient precision that the bounds of the claimed subject matter are distinct. See, also, In re Warmerdam, 33 F3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). Moreover, this claim recites "substantially." Use of that term in a claim does not render the claim indefinite if the specification provides a standard whereby one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification, Seattle Box Co., Inc. v. Industrial Coating and packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 573-4 (Fed. Cir. 1984).

The second paragraph of 35 U.S.C. § 112 requires claims to be set out and circumscribe a particular area with a reasonable degree of precision and particularity, In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

Appellants respectfully submit that the claims fully comply with 35 U.S.C. §112, second paragraph as they stand because one of ordinary skill in the art can readily determine the metes and bounds of the invention to determine whether or not they infringe the claimed invention and can do so without speculating as to exactly where, in the claimed process, an increased nutrient value is achieved.

Moreover, the case cited in MPEP § 2172.01 (on which this rejection is based) to require

inclusion of essential structural cooperative relationships, In re Mayhew, 188 USPQ 356 (CCPA 1976), involved method claims that omitted a step without which the invention as claimed was wholly inoperative (meaning it simply would not work and could not produce the claimed product). That is not the situation here.

Furthermore, the Office Action is not applying "In re Mayhew" in the context in which it was presented, i.e., for omitting an essential element that was required to make the method claims operative but, instead, as a license to require that Applicant redefine his invention the way the Examiner wants it to be defined, instead of the way every applicant is entitled to define it.

The Court of Customs and Patent Appeals has addressed this issue and resolved it long ago in In re Borkowski, 164 USPQ 642, 645 (CCPA 1970), where the court stated that "[W]hile the examiner states the requirement to be claims which "particularly point out and distinctly claim *the invention* "(emphasis added), § 112 actually requires claims "particularly pointing out and distinctly claiming *the subject matter which applicant regards as his invention* "(emphasis added). In reality, this means that applicant must particularly point out and distinctly claim the "*subject matter sought to be patented*".

In other words, as explained in the "Borkowski" decision, an Applicant is free to define what he or she regards as the invention, and it is improper for an Examiner to tell the Applicant how to claim what the Applicant regards as his invention as long as the metes and bounds of the invention are clear and definite, as they are in the claims under rejection. Moreover, it is noted that the Examiner fails to indicate that the metes and bounds of the claim are unclear.

Accordingly, the rejection of claims 87, 89, 90, 96, 106, 110, 116 and 122 is improper

and should be reversed.

Claims 109-111 and 119-122 stand rejected under 35 USC § 112, second paragraph as being indefinite. This rejection is respectfully traversed.

These claims are allegedly indefinite because it is unclear what apparatus is associated with the system, e.g., what apparatus is necessary for "a system determining means for determining the desirable levels of crude protein in the feed composition." The Office Action states that it is unclear if the system is based on personal observation of the animal for which the feed is to be fed, and if the system is based on chemical observation of the animal to which the feed is to be fed.

Appellants respectfully submit that this rejection is improper for a number of reasons.

Firstly, as explained above, Appellants do not understand why this rejection is based on the second paragraph of 35 USC § 112, because, as pointed out above, the test for compliance with the second paragraph of 35 U.S.C. § 112, as stated in Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), cert. denied, 510 U.S. 1100 (1994) is whether one skilled in the art would understand the bounds of the claims when read in light of the specification. If the claims, read in light of the specification, reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. See, also, In re Merat, 519 F.2d 1390, 1396, 186 USPQ 471, 476 (CCPA 1975), which stated that the question under Section 112, second paragraph is whether the claim language, when read by a person of ordinary skill in the art in light of the specification, describes the subject matter with sufficient precision

that the bounds of the claimed subject matter are distinct. See, also, In re Warmerdam, 33 F3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). Moreover, these claims recite "substantially." Use of that term in a claim does not render the claim indefinite if the specification provides a standard whereby one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification, Seattle Box Co., Inc. v. Industrial Coating and packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 573-4 (Fed. Cir. 1984). Appellants respectfully submit that this terminology is clear to one of ordinary skill in the art based on Appellants' disclosure.

Moreover, the second paragraph of 35 U.S.C. § 112 requires claims to be set out and circumscribe a particular area with a reasonable degree of precision and particularity, In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

Appellants respectfully submit that the claims fully comply with 35 U.S.C. § 112, second paragraph as they stand and because one of ordinary skill in the art can readily determine the metes and bounds of the invention to determine whether or not they infringe the claimed invention.

With respect to the issue of whether one of ordinary skill in the art is capable of determining what type of apparatus can be used to determine desirable levels of crude protein in the feed composition, Appellants respectfully submit that one of ordinary skill in this art to which this invention pertains is capable of doing so. In this regard, Appellants respectfully submit that the burden of establishing a *prima facie* case to support this rejection, is on the Office, not on the Appellants and the Office Action fails to even address the level of one of

ordinary skill in this art, as is required to make a rejection of this type, which appears to be more related to sufficiency of disclosure that the issues covered by the second paragraph of 35 USC § 112.

Appellants respectfully submit that factors to be considered by an Examiner in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of guidance or direction presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *See* In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), citing Ex parte Formal, 230 USPQ 546, 547 (Bd. Pat, App. & Int. 1986).

Unfortunately, the outstanding Office Action fails to address these eight factors at all, let alone with the required objective factual evidence in support thereof, and for the reasons presented above and for these additional reasons, the Office Action fails to make out a *prima facie* case of failure to comply with 35 USC §112, second paragraph.

Additionally, examples of equipment used to achieve the claimed products and perform the claimed methods are disclosed throughout the originally filed disclosure. See, for example, paragraphs [0030], [0056]-[0059] and [0069].

Accordingly, reconsideration and withdrawal of this rejection of claims 109-111 and 119-122 are respectfully requested.

C. Claims 84-122 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,824,355 to Heitritter et al. ("Heitritter") in view of U.S. Patent 5, 219,596 to Schingoethe (Feed Wet Distillers Grains to Dairy Cattle, May 2001).

Initially, Appellants respectfully submit that claims 84-122 do not stand or fall together. More particularly, Appellants respectfully submit that independent method claims 84, 103, 105, 106, 109, 112, 114-115, and 119-121 do not stand or fall together with one another, and dependent product claims 85, 104, 107, 108, 113, 117, 118 do not stand or fall together with one another.

During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). This burden can be satisfied when the PTO presents evidence, by means of some teaching, suggestion or inference either in the applied prior art or generally available knowledge, that would have appeared to have suggested the claimed subject matter to a person of ordinary skill in the art or would have motivated a person of ordinary skill in the art to combine the applied references in the proposed manner to arrive at the claimed invention. See Carella v. Starlight Archery Pro Line Co., 804 F.2d 135, 140, 231 USPQ 644, 647 (Fed. Cir. 1986); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); In re Rinehart, 531 F.2d 1048, 1051-1052, 189 USPQ 143, 147 (CCPA 1976).

If the PTO fails to meet this burden, then the applicant is entitled to the patent. However, when a *prima facie* case is made, the burden shifts to the applicant to come forward with evidence and/or argument supporting patentability. Patentability *vel non* is then determined on the entirety of the record, by a preponderance of evidence and weight of argument, *Id.*

A prior art reference anticipates the subject matter of a claim when that reference discloses every feature of the claimed invention, either explicitly or inherently. In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and Hazani v. Int'l Trade Comm'n, 126 F.3d 1473. 1477. 44 USPQ2d 1358, 1361 (Fed Cir. 1997). While, of course, it is possible that it is inherent in the operation of the prior art device that a particular element operates as theorized by the Examiner, inherency may not be established by probabilities or possibilities. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Heitritter, the primary reference, has a very limited disclosure with respect to Appellants' claimed invention.

Heitritter states that the field of its invention relates to a method of manufacturing a ruminant feed. Nothing whatsoever is stated about predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, or of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, in general, or based on an empirically derived formula, or of a feed product with predictably enhanced nutrient value of distillers, brewers or fermenters grain byproducts, or of predictably enhanced nutrient value of distillers, brewers or fermenters grain solubles, in general, or based on an empirically derived formula, as claimed.

Heitritter sets forth five objects of invention. The first object of the invention is to a method for manufacturing ruminant feeds that are not easily destroyed in the rumen. The second object of the invention is to provide a ruminant feed that delivers a large amount of nutrition to the post-rumen digestive system of animals. Neither the first or second objects of Heitritter's invention is directed to creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product, wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula: UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644, as claimed, as claimed.

The third object of Heitritter's invention is to provide a novel ruminant feed that, when consumed by lactating cows, increases their milk production. This object of the invention is limited to making a feed product that improves a specific ruminant animal characteristic. This third object of the invention of Heitritter is not directed to creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value

by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product, wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula: UIP (% of CP) = (End Product Temperature °F x 0.819) – 107.644, as claimed, as claimed.

The fourth object of the invention concerns making a feed product that accelerates the weight of grain of animals that can eat the feed. Like the third object of the invention, this fourth object of the invention is limited to making a feed product that improves a specific ruminant animal characteristic. This fourth object of the invention of Heitritter is not directed to creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein

(CP) to an end product temperature in a predictable and repeatable manner to produce said end product, wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula: UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644, as claimed, as claimed.

The fifth object of Heitritter's invention is to provide a novel ruminant feed that contains no chemical additives. This fifth object of Heitritter's invention has nothing to do with creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product, wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula: UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644, as claimed, as claimed.

Moreover, Heitritter, which discloses its product in terms of requiring oil meal feed content, hull content, and moisture content, uses only two examples (Example I and Example II) of making its feed product, and only uses these two examples to measure RUP in the feed product. That's it. There is absolutely no disclosure in Heitritter of creating a distillers, brewers

or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product, wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula: UIP (% of CP) = (End Product Temperature °F x 0.819) – 107.644, as claimed, as claimed.

The problem facing Heitritter was how to manufacture protein protected ruminant animal feed. Heitritter knew what he wanted to do and he provided a method to achieve it, but in no way did he do so in a predictable way, in general, or according to an empirically derived formula, as claimed. In no way did Heitritter come up with a formula that provided predictability.

Furthermore, Heitritter does not predetermine the levels of crude protein and amino acids or the UIP/RUP that its end product itself will contain. Heitritter simply provides two examples of making a feed product and then analyses the product to see what levels were achieved in the rumen. Also, Heitritter's process is not varied to achieve a variety of possible outcomes, let alone a variety of predictable nutritional feed value outcomes.

Moreover, Heitritter completely fails to disclose any specific levels of crude protein and amino acids or the UIP/RUP that the end product will contain. Heitritter also fails to predetermine any specific levels of crude protein and amino acids or the UIP/RUP that the end product will contain. There is a good reason for this, which is that Heitritter does contain any clues, hints or suggestions that would trigger a sequential process that would result in, or otherwise render obvious, the claimed invention, and Heitritter does not have an empirically derived formula to use to achieve the predetermined levels in any manner whatsoever, let alone predictably, as claimed.

The other reference used in the rejection, i.e., Schingoethe, is, like Heitritter, totally devoid of any concept of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, or of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, in general, or based on an empirically derived formula, or of a feed product with predictably enhanced nutrient value of distillers, brewers or fermenters grain byproducts, or of predictably enhanced nutrient value of distillers, brewers or fermenters grain solubles, in general, or based on an empirically derived formula, as claimed.

Schingoethe is directed to reporting results of relatively recent studies in which distillers grains were fed to dairy cattle. Schingoethe states that today's distillers grains differ from those fed to cows in 1895 and that present day distillers grains contain more protein energy, and that cows today produce much more milk than was produced by their ancestors.

Accordingly, no matter how these references are combined, they will not result in, suggest, or otherwise render obvious the claimed invention.

Furthermore, the two references applied in this rejection teach away from being combined, as suggested. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the Appellant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the Appellant. See W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1550-51, 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984); In re Sponnoble, 405 F.2d 578, 587, 160 USPQ 237, 244 (CCPA 1969) (references taken in combination teach away since they would produce a "seemingly inoperative device"); In re Caldwell, 319 F.2d 254, 256, 138 USPQ 243, 245 (CCPA 1963) (reference teaches away if it leaves the impression that the product would not have the property sought by the Appellant). See, In re Gurley, 31 USPQ2d 1130 (Fed. Cir. 1994).

In this regard, Heitritter is also limited by its own disclosure to specific starting materials. Heitritter explicitly states that "[T]he process of this invention requires a feed comprising oil seed meal, hulls and water and converts the combined moist meal feed into a protein protected ruminant feed."

Oil seeds are plants that are grown specifically for their high oil content, the most common in North America being soybeans (18% oil), canola (40% oil), sunflowers (25% oil) and flax (35% oil). There are a few other crops from which oil is extracted but as a secondary

product and these include peanuts, cotton and corn. Corn has about 3.5% oil in the grain and corn oil is extracted only after the oil has been concentrated in some of the byproducts formed during the refining of corn starch. In Appellants opinion, corn is grown for its starch content and not its oil and is not considered an oil seed by one of ordinary skill in the art to which this invention pertains. Corn is also very low in crude protein being about 7 to 9% and thus does not suit this invention. Heitritter does not mention "corn" or "corn byproducts" in the patent because they are not suitable for his end product. Moreover, adding soybean hulls based on Schingoethe's generic historical disclosure would not enhance the nutrient source and, in fact, would reduces the nutrient levels because the hulls are very much inferior in nutrient levels compared to soybean meal. As example of this, consider that soybean meal is about 48% crude protein and soybean hulls are only about 10% crude protein. Mixing the two will result in a product that is below 48% crude protein. Therefore, one of ordinary skill in the art will not be properly motivated to modify Heitritter in view of Schingoethe, as suggested. Also, even if Heitritter is modified regarding mixing of ingredients in view of Schingoethe, as suggested, Heitritter still will not make a mixed product that will have enhanced nutritional values.

Moreover, Appellants respectfully submit that following Heitritter's teachings will never result in the claimed invention, which recites adding nutrient values to its starting material, in the sense that Heitritter never adds any nutrient values to his starting product to increase its nutrient value before heating it or adding water to it, as claimed. In this regard, the Office Action fails to provide objective factual evidence that one of ordinary skill in the art would be properly motivated to modify Heitritter to add any nutrients to his starting product to increase its nutrient

value, especially where Heitritter's starting material already has reasonable levels of nutrient values.

Furthermore, as discussed above, these are not all of Heitritter's shortcomings. Heitritter does not (1) predetermine nutrient values of the end product; (2) add any nutrient source that would affect the protein and/or amino acid levels; (3) predict end product UIP level according to temperature achieved during cooking and/or drying, whereas Appellants disclose adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirical relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature to predictably achieve desired nutrient values, and even recite in claim 86, a specific empirically obtained formula to predict this: UIP(% of CP) = (End product temperature °F X 0.819) – 107.644; or (4) mention the use of any fermentation products, either wet or dry.

Moreover, Appellants respectfully submit that Heitritter not only completely fails to explicitly disclose the claimed empirical formula for RUP production, but that Heitritter does not disclose it inherently, either. In this regard, Appellants note that inherency may not be established by probabilities or possibilities and must be a necessary result. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). In order for prior art to anticipate a claim . . ., the inherency must be certain. *Glaxo, Inc. v. Novopharm Ltd.,* (EDNC 1993) 830 F. Supp 871, 29 USPQ2d 1126; *Ex parte Cyba* (POBA 1966) 155 USPQ 756; *Ex parte McQueen* (POBA 1958) 123 USPQ 37.

Further, in this regard, Appellants respectfully submit that Heitritter gives data in only one of his examples, i.e., Table II, concerning temperature and RUP. In the explanation of the table he states that the cooked material had a temperature of 200°F and the table shows that this material reached a RUP of 69.6% of the crude protein as compared to only 25.6% RUP in the uncooked product. In order to draw a line between these two points so as to calculate the slope of the line we need to know the temperature of the uncooked product. We assume it was "ambient temperature," but Heitritter does not explicitly state what it is. Further, in this regard, if the production was done in a heated building this temperature might be about 70 degrees F., and if the production was done in an unheated building (as is the norm in production) the temperature may be close to freezing as in the winter or above 85 degrees F., as in the Summer.

For statistical analysis of the data set one needs paired values, that is, a series of RUP values for given cooked temperatures. As indicated above, the paired value for the first RUP reported by Heitritter is not disclosed, and thus no statistical analysis of Heitritter's data is possible.

Contrarily, the Appellants' data has multiple paired measurements (see table 14). Regression analysis was computed on the various paired measurements given in this table using the statistical package found in Microsoft Excel. The results of this analysis for the independent variable of product temperature and the dependent variable of UIP/RUP is given in table 8, which is reproduced below for the Examiner's convenience.

The r^2 value of 0.8568 means that 85.68% of the variation in the UIP/RUP value is determined by the temperature the product reached while cooking (end temperature). This is

highly statistically significant as indicated by the F value and the significance is calculated as 0.000343, which means that 99.97% of the time this relationship will hold true. The analysis gives us the *y* intercept as -107.644 and the *x* variable as 0.8190. This means that the empirical formula for calculating the UIP/RUP is as follows:

UIP(% of CP) = (EndTemp ^{0}F X 0.819) -107.644

Regression Analysis of Experimental Mixtures

TABLE 8

REGRESSION OF UIP % OF CP AND END TEMPERATURES

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9256589
R Square	0.856844399
Adjusted R Square	0.836393598
Standard Error	3.338503243
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	466.9767529	466.9767529	41.89784214	0.000342787
Residual	7	78.01922732	11.1456039		
Total	8	544.9959802			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-107.644092	26.91669969	-3.9991564	0.00519549	-171.2919273	-43.9962566	171.2919273	43.99625659
X Variable 1	0.818980743	0.126525442	6.47285425	0.000342787	0.519795829	1.118165656	0.519795829	1.118165656

End Temp	UIP% CP Average
195	53.68
218	74.50
229	82.93
208	65.87
218	67.48
209	62.07
214	65.32
208	63.31
214	62.75

Heitritter does not teach of the points of RUP/UIP levels and temperatures. Appellants respectfully submit that there is no way that such relationships can be extrapolated from Heitritter's disclosed data because Heitritter discloses only one value for his cooking temperature. Moreover, as a matter of fact, Heitritter certainly does not contain a disclosure of extrapolating such relationships.

The Office Action further asserts that it would be obvious to one of ordinary skill in the art to include an increase in the amount of RUP depending on the desired final product and the amount of RUP in the starting material (see page 6, last three lines). Unfortunately, absolutely

no factual evidence, let alone any objective factual evidence, is presented to support this speculative conclusion. Moreover, as pointed out above, both applied references fail to contain a disclosure of several positively recited features, including the predictability feature and steps (1) and (3), as discussed above. In other words, this assertion attempts to make something out of nothing, i.e., lack of disclosure, but that is not logically possible. Accordingly, this assertion is improper and should be withdrawn.

Additionally, with respect to the UIP as a percentage of the crude protein that is recited in claims 86, 96, 106, 110, 116 and 112, the claimed percentages are simply not disclosed nor are they obvious. The only stated basis for rejecting these claims under 35 USC § 103(a) rests on the "112 rejections above." That rejection indicated that it was unclear what RUP source feed is increased and what initial amount of RUP is increased. In this regard, Appellants respectfully submit that the initial RUP is what is in the created distillation and/or fermentation by-product-nutrient source mixture recited in those claims. The claimed percentages of the UIP as a percentage of the crude protein is simply not disclosed or suggested by Heitritter.

Additionally, with respect to claims 86, 89, 90, 94 and 95, the Office Action says that because it is not equipped to manufacture the product, the burden shifts to Appellants to demonstrate that the prior art product used in rejecting the claimed invention is different. Appellants disagree with this proposition that the burden shifts to Applicant because the Office does not have the wherewithal to test the products disclosed or suggested by the Heitritter/Schingoethe reference combination, and no case law is presented to support this unique argument, which is contrary to all of the case law cited above. In fact, it is contrary to the

established case law cited above, which requires that the office make out a *prima facie* case of unpatentability before the burden shifts to Appellants.

Accordingly, the Office Action fails to make out a *prima facie* case of explicit or inherent disclosure of the claimed invention by either applied reference, and fails to make out a prima facie case of obviousness of the claimed invention.

Thus, reversal of this rejection of claims 84-97 and 99-122 is respectfully requested.

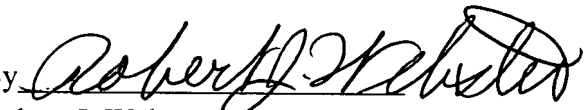
CONCLUSION

Appellants respectfully submit that claims 84-97 and 99-122 are patentable over the applied art and fully comply with the requirements of 35 USC §112, second paragraph, and that all of the rejections and objections of record should reversed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Dated: October 9, 2007

Respectfully submitted,

By 
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CLAIMS APPENDIX

1-83. (Canceled)

84. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient valūe by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters by-products based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

85. (Previously Presented) The end product made by the process of claim 84.

86. (Previously Presented) The method of claim 84, wherein the upper level of the amino acids as a percentage of the RUP/UIP is about 2% for methionine and about 7% for lysine.

87. (Previously Presented) The method of claim 84, wherein the rumen undegradable protein (RUP/UIP) of the byproduct-nutrient-source mixture is increased in a range of from about 27% to about 83%.

88. (Previously Presented) The method of claim 84, wherein the end product moisture level is in a range from about 0% to about 14%.

89. (Previously Presented) The method of claim 84, wherein the UIP of the byproduct-nutrient-source mixture, on a crude protein basis, is increased by about 115 percent; methionine, as a percentage of UIP, is increased about 30 percent; UIP methionine, as a percentage of dry matter, is increased by about 179 percent; lysine, as a percentage of UIP is

decreased by about 3.4 percent; and UIP lysine, as a percentage of dry matter, is increased by about 108 percent.

90. (Previously Presented) The method of claim 84, wherein the UIP of the byproduct-nutrient-source mixture, on a crude protein basis, is increased by about 108 percent; methionine, as a percentage of UIP, is increased about 30 percent; UIP methionine, as a percentage of dry matter, is increased by about 169 percent; lysine, as a percentage of UIP is decreased by about 1.0 percent; and UIP lysine, as a percentage of dry matter, is increased by about 111 percent.

91. (Previously Presented) The method of claim 84, wherein the distillation and/or fermentation by-product-nutrient source mixture having an enhanced nutrient value is a mixture of about two-thirds wet corn distillers grains and about one third high protein soybean meal.

92. (Previously Presented) The method of claim 84, wherein the end product crude protein is in a range up to about 54 percent of the end product composition.

93. (Previously Presented) The method of claim 84, wherein the end product UIP is in a range from about 63% to about 83 percent of the end product composition.

94. (Previously Presented) The method of claim 84, wherein the UIP content of the end product has a pepsin digestibility in a range of about 74% to about 94%.

95. (Previously Presented) The method of claim 84, wherein the crude protein range in the end product is from about 30% to about 58%; the UIP range in the end product is from about 63% to about 83% of the crude protein; and the post ruminal pepsin digestibility range is from about 63% to about 94% of the UIP.

96. (Previously Presented) The method of claim 84, wherein the bypass protein (RUP/UIP) level of the end product is between one and one-fourth times and approximately two and one-half times the original level of the byproduct-nutrient-source mixture, wherein the RUP/UIP in the end product is from about 50% up to about 83% of the crude protein level.

97. (Previously Presented) The method of claim 84, wherein the temperature of mixture is increased to a range of about 208 degrees Farenheit to about 210 degrees Farenheit.

98. (Canceled)

99. (Previously Presented) The method of claim 84, wherein the temperature is adjusted to achieve an end product temperature in a range of from about 211 degrees Farenheit to about 223 degrees Farenheit.

100. (Previously Presented) The method of claim 84, wherein the temperature is in a range that causes denaturation of the protein of the by-product-nutrient source mixture.

101. (Previously Presented) The method of claim 84, wherein temperature of the by-product-nutrient-source mixture is adjusted in a range from about 180°F to about 250°F.

102. (Previously Presented) The method of claim 84, wherein the temperature of the by-product-nutrient-source mixture is adjusted to be about 218°F.

103. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet brewers, distillers or fermenters byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

104. (Previously Presented) The end product made by the process of claim 103.

105. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, and of producing a protein feed or feed supplement end product having a crude protein content of over about 30% of the feed or feed supplement end product composition on a dry matter basis, and a UIP/RUP content of over 50% and up to about 83% of the crude protein, amino acid levels in the crude protein and in the

RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers of fermenters byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

106. (Previously Presented) The method of claim 105, wherein the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is adjusted and is in a range from approximately one and one-fourth times to approximately two

and one-half times the bypass protein (RUP/UIP) level in the starting by-product-nutrient-source mixture.

107. (Previously Presented) The end product made by the process of claim 105.

108. (Previously Presented) The end product made by the process of claim 106.

109. (Previously Presented) A system for predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, and for producing a protein feed or feed supplement end product having a crude protein content of over 30% of the feed or feed supplement end product composition on a dry matter basis, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein of, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

system mixing means for creating a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower

meal into wet distillers, fermenters or brewers byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and

system adjusting means for adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product, -

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

110. (Previously Presented) The system of claim 109, wherein the bypass protein (RUP/UIP) level of the end product is between one and one-fourth times and approximately two and one-half times the original level of the byproduct-nutrient-source mixture, wherein the RUP/UIP in the end product is about 50% and up to about 83% of the crude protein levels.

111. (Previously Presented) The system of claim 109, wherein the system adjusting means is provided for providing the temperature in a range that causes denaturation of the protein of the by-product nutrient source mixture.

112. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed

supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

113. (Previously Presented) The end product made by the process of claim 112.

114. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

115. (Previously Presented) A method of predictably enhancing the nutrient value of distillers, brewers or fermenters grain solubles, and of producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by (a) adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and (b) adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the

crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product.

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

116. (Previously Presented) The method of claim 115, wherein the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is approximately 2.44 times the bypass protein (RUP/UIP) level in the starting by-product solubles-nutrient-source mixture.

117. (Previously Presented) The end product made by the process of claim 114.

118. (Previously Presented) The end product made by the process of claim 115.

119. (Previously Presented) A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product for having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8%

lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60%, and up to about 94% comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

system determining means for creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and

system adjusting means for adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

120. (Previously Presented) A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product for having a crude protein content of over 30% on a dry matter basis of the feed or

feed supplement end product composition, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

system determining means for creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources to create an enhanced nutrient value by-product-nutrient source mixture of the distillation or fermentation byproducts; and

system adjusting means for adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

121. (Previously Presented) A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and a UIP/RUP content of over 50% and up to about 83% of the crude protein, amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

system determining means for determining the desirable levels of crude protein, UIP/RUP, amino acids and post ruminal digestibility in an end product;

system determining means for creating a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and system adjusting means for adjusting temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

UIP (% of CP) = (End Product Temperature ^{o}F x 0.819) – 107.644.

122. (Previously Presented) The system of claim 119, wherein the system adjusting means for providing a bypass protein (RUP/UIP) level of the end product that is over 50% and up to 83% of the crude protein increases the bypass protein (RUP/UIP) level to approximately 2.44 times the bypass protein (RUP/UIP) level in the starting by-product solubles-nutrient-source mixture.

IX EVIDENCE APPENDIX

(None) - No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the Examiner is being submitted.

X. RELATED PROCEEDINGS APPENDIX

(None) - No related proceedings are referenced in Section II, above.